

Preliminary survey of Taita Falcon *Falco fasciinucha* in the Drakensberg escarpment region of Mpumalanga and Limpopo Provinces, South Africa

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Inventaire préliminaire du Faucon taita *Falco fasciinucha* dans la région de l'escarpement du Drakensberg des provinces de Mpumalanga et Limpopo, Afrique du Sud. Le Faucon taita *Falco fasciinucha* est une espèce rare et mal connue, pour laquelle on a repéré moins de 40 sites de nidification en Afrique de l'Est subsaharienne. Centré sur l'escarpement de Mpumalanga/Limpopo en Afrique du Sud, un inventaire a été organisé afin de déterminer la taille et l'importance pour la conservation de la population du Faucon taita dans le nord du pays. Une équipe d'observateurs expérimentés a passée deux semaines en septembre 2006 sur des sites de nidification connus ou probables. Deux nouveaux nids ont été trouvés, en plus des deux sites déjà connus dans la région. Trois couples de Faucons pèlerins *F. peregrinus*, 12 couples de Faucons laniers *F. biarmicus*, 23 couples de Crécerelles des clochers *F. (tinnunculus) rupicolus*, cinq couples d'Aigles de Verreaux *Aquila verreauxii* et cinq couples de Buses rounoirs *Buteo rufofuscus* ont également été localisés. À cause du manque de temps et des contraintes logistiques, tous les sites possibles ou probables n'ont pas pu être contrôlés en 2006. Un deuxième inventaire a donc été proposé pour 2007, ainsi qu'un atelier Pan-Africain pour discuter des priorités de recherche pour cette espèce menacée.

Summary. The Taita Falcon *Falco fasciinucha* is a rare and poorly known species, with fewer than 40 known nest sites scattered across eastern sub-Saharan Africa. A survey was initiated to determine the size and conservation value of a possible population of Taita Falcons in northern South Africa, centred on the Mpumalanga/Limpopo escarpment region. In September 2006 a team of expert observers spent two weeks searching for Taita Falcon nest sites. Two new nests were located, in addition to two sites already known in the area. Three pairs of Peregrine Falcon *F. peregrinus*, 12 pairs of Lanner Falcon *F. biarmicus*, 23 pairs of Rock Kestrel *F. (tinnunculus) rupicolus*, five pairs of Verreaux's Eagle *Aquila verreauxii* and five pairs of Jackal Buzzard *Buteo rufofuscus* were also located. Not all possible or likely Taita Falcon sites were checked in 2006 because of time and logistical constraints. A repeat survey in 2007 is proposed, and a Pan-African workshop is suggested to discuss research priorities for this threatened species.

Taita Falcon *Falco fasciinucha* is a small and highly specialised, bird-hunting raptor, which is sparsely and patchily distributed through eastern sub-Saharan Africa (Kemp 1994, Ferguson-Lees & Christie 2001). Whilst it is poorly known throughout much of its range, the species is generally considered to be rare and is largely restricted to well-wooded habitats, and to mountains or deep river valleys where high, sheer rock-faces are available as nesting and foraging sites. Aspects of its natural history have been studied opportunistically at sites in Uganda (Möller 1989), Malaŵi (Hunter *et al.* 1979), Zambia (Dowsett 1983) and South Africa (Jenkins *et al.* 1991). A more concerted and intensive research

initiative in Zimbabwe has yielded the only comprehensive information on regional population size, diet and breeding performance (Hartley *et al.* 1993, Hartley 2000).

The global population of Taita Falcon is probably substantially less than 500 pairs, and fewer than 40 nest sites are known, most of them in the Zambezi Valley, Zimbabwe (Hartley 2000). Even in known areas of concentration, the species seems to occur irregularly, with territories prone to sudden abandonment (Hartley 2000; R. Hartley unpubl.). Breeding success is generally poor, and estimates of certain key life-history parameters (e.g. age of first breeding, length of incubation, capacity to re-lay after clutch failure), largely

derived from small samples of captive birds, suggest that the species' reproductive potential is unusually low (R. Hartley unpubl.). Taita Falcon is considered globally Near Threatened (BirdLife International 2004). However, given its sparse distribution, our generally poor knowledge of its status, even in supposed areas of concentration, and that these areas may not be secure, we believe this classification merits upgrading and that Taita Falcon should be afforded the highest priority by research and conservation agencies throughout its range.

The first breeding pair of Taita Falcons in South Africa was discovered on the Drakensberg escarpment, in Mpumalanga Province, in the late 1980s, and was formally documented in the early 1990s (Jenkins *et al.* 1991, Milstein 2000). Since then, another definite nest site has been located in the same area and 5–6 other possible sites identified, although the region has not been thoroughly or systematically searched (D. Rushworth & P. le Milstein unpubl.). Hence, available information indicates that the Mpumalanga/Limpopo escarpment area may support a relatively significant number of Taita Falcons. The primary objective of the survey undertaken in September 2006 was to obtain a more accurate estimate of the number of breeding pairs present in the region, as an important precursor to a longer-term research and monitoring study of the resource requirements and conservation status of this population.

Methods

In order to encompass the maximum amount of remote, high cliff habitat within an area of manageable size, the study was centred on the Blyde River Canyon Nature Reserve (24°33'S 30°48'E), and included the main escarpment line, extending c.20 km south-east to just south of Mariepskop, and c.40 km north-west to the Olifants River valley, just west of the J. G. Strijdom Tunnel (Fig. 1). The escarpment marks the abrupt interface between the Highveld and the Lowveld in north-eastern South Africa. The Lowveld edge features grass-covered plateaux grading into mountain peaks with broadleaf woodland and deeply incised gorges. Altitudes reach c.2,000 m, mean daily temperatures vary from around 5–25°C, and annual rainfall is c.900–1,000 mm, falling mainly in summer. The Lowveld plains to the north-east possess broadleaf and *Acacia* woodland, with

riparian forest along larger watercourses and Afromontane forest adjacent to the escarpment in the south-east. Altitude is fairly uniform at c.500–600 m, mean daily temperatures vary from about 15–30°C, and annual rainfall totals c.800 mm, most of which falls in summer. The escarpment line itself constitutes a multi-tiered array of moderate to very high (>300 m), sheer rock faces (Fig. 2), interspersed with steep, densely wooded slopes, and with a total vertical extent of c.500–600 m. Two major rivers cut the escarpment flowing roughly south-west to north-east—the Olifant's and the Blyde. The latter is impounded to form the Blyderivierspoort Dam which fills the lower reaches of the Blyde River Canyon.

A very simple and direct approach to the survey was employed, involving periods of passive observation by a small team of expert raptor biologists, positioned strategically along the top of the escarpment, or on the scree slopes below the cliff-line. It was performed over 15 days (17 September–1 October) coinciding with the start of the breeding season, when Taita Falcon pairs were likely to be present and conspicuous on their nest cliffs (R. Hartley pers. comm.).

All survey work was informed by observations made previously during helicopter surveys conducted in the early to mid 1990s (Jenkins *et al.* 1991, Wagner & Jenkins 1996; T. Wagner unpubl.) and by ground surveys conducted sporadically over the last 15 years (Milstein 2000; D. Rushworth & P. Milstein unpubl.). This information was collated and mapped, and a strategy was developed for the optimal distribution of pairs of observers along the cliff-line, to obtain maximum coverage of the areas considered most likely to hold breeding pairs. Thereafter, each day the team of observers was split into 2–3 groups of 2–3 people each, and each group manned selected observation points, equipped with good-quality 10× binoculars, 20–60× telescopes, two-way radios, appropriate 1:50,000 topographic maps, and GPS units, to complete observation periods of 6–12 hours. All Taita Falcon sightings were recorded in as much detail as possible, with emphasis on whether or not (i) pairs were present, (ii) the birds observed exhibited any breeding behaviour, and (iii) definite or possible nest ledges could be identified. Any incidental observations of other notable cliff-nesting species present in the area—Peregrine Falcon *F. peregrinus*, Lanner Falcon *F.*

biarmicus, Rock Kestrel *F. (tinnunculus) rupicolus*, Verreaux's Eagle *Aquila verreauxii*, Jackal Buzzard *Buteo rufofuscus*, White-necked Raven *Corvus albi-collis* and Black Stork *Ciconia nigra*—were also recorded. Parts of the area were also searched by helicopter, although attempts to do this with any rigour or success were thwarted by a range of practical problems. Ultimately, the helicopter surveys did not add materially to the results of the survey.

Results and Discussion

In total, c.50 possible Taita Falcon nest cliffs were surveyed, including c.50 km of the main escarpment (Fig. 1), with c.60 person-days of effort. The survey located definite or probable nesting areas of 52 pairs of cliff-nesting raptors—four pairs of Taita Falcons, three pairs of Peregrine Falcons, 12 pairs of Lanner Falcons (Table 1), 23 pairs of Rock Kestrels, five pairs of Verreaux's Eagles and five pairs of Jackal Buzzards—as well as two pairs of White-necked Ravens and three pairs of Black

Storks. Two of the four Taita Falcon sites recorded were already known, so only two new sites were found. Of the four pairs, one was observed on the first day of the survey and had evidently not yet laid but was actively involved in ledge displays, one was watched regularly throughout the survey and appeared not to have laid by the end, but was subsequently reported to have raised at least one young by the end of the year, and the other two were well into incubation by the end of September. Unfortunately, it was not possible to return to the study area later in the season to accurately determine the outcome of each breeding attempt.

Four Taita Falcon nest sites is too few for meaningful analysis of habitat preferences, or even to develop a useful search image of likely nesting areas to focus future survey efforts. To compound this problem, the four sites were quite markedly different in their physical structure. One was on a high, very large, primary escarpment rock-face,

Table 1. Approximate physical parameters and spacing of the large falcon nest sites located during the 2006 Taita Falcon survey of the Mpumalanga/Limpopo Drakensberg escarpment.

Tableau 1. Paramètres physiques et espacements approximatifs des sites de nidification des grands faucons localisés pendant l'inventaire du Faucon taita de 2006 sur l' escarpement du Drakensberg de Mpumalanga/Limpopo.

Site name	cliff height (m)	elevation (m)	aspect	underlying habitat	nearest known conspecific pair (km)	nearest known large falcon pair species	distance (km)
Taita Falcon							
1	>300	750–1,000	SE	riparian forest / woodland	4.1	Peregrine Falcon	0.8
2	150–300	500–750	NE	woodland and thicket	4.1	Lanner Falcon	2.6
3	75–150	250–500	NW	riparian forest / woodland	7.8	Lanner Falcon	4.1
4	75–150	<250	NW	riverbed / riparian thicket	7.8	Lanner Falcon	4.3
Peregrine Falcon							
1	150–300	250–500	NW	woodland / dam	6.6	Lanner Falcon	1.5
2	150–300	250–500	SE	riparian forest / woodland	6.6	Taita Falcon	0.8
3	75–150	750–1,000	SE	woodland and thicket	8.6	Lanner Falcon	1.0
Lanner Falcon							
1*	150–300	750–1,000	NE	forest and plantation	2.2	Lanner Falcon	2.2
2*	150–300	750–1,000	NE	forest and plantation	2.2	Lanner Falcon	2.2
3	150–300	>1,000	E	forest	1.3	Lanner Falcon	1.3
4*	>300	>1,000	NE	forest	1.3	Lanner Falcon	1.3
5	75–150	250–500	SE	woodland / dam	4.2	Peregrine Falcon	1.5
6	75–150	250–500	NE	woodland / dam	4.2	Peregrine Falcon	2.7
7	>300	750–1,000	E	woodland and thicket	5.3	Taita Falcon	0.9
8	>300	750–1,000	NE	woodland	1.7	Lanner Falcon	1.7
9	75–150	500–750	E	woodland	1.7	Peregrine Falcon	1.0
10	150–300	750–1,000	NW	woodland	3.3	Lanner Falcon	3.3
11	150–300	500–750	NW	woodland and thicket	3.3	Lanner Falcon	3.3
12	75–150	250–500	NW	woodland / riverbed	7.2	Taita Falcon	3.6

*These Lanner sites were occupied by Peregrines in the mid to late 1990s (Wagner & Jenkins 1996)

two were on lower, smaller, secondary faces, and the fourth was on a low, smallish crag immediately adjacent to a major river. Generally, Taita, Peregrine and Lanner Falcons all tended to favour the lower-tier cliffs of the escarpment, perhaps because these tended to be the highest and most sheer, less frequently covered by mist, and situated closest to what is most likely to be the falcons' primary avian prey base, in the Lowveld woodland below the escarpment (Jenkins & Avery 1999, Hartley 2000).

Whilst our survey data cannot be considered as absolute counts of falcon populations in the area, mean nearest neighbour distances for Taita, Peregrine and Lanner Falcons on the Mpumalanga/Limpopo escarpment (6.0, 7.3 and 3.2 km respectively; Table 1) compare well with figures for these species elsewhere in Africa (Hartley 2000, Jenkins & Hartley 2005, Jenkins 2005a,b). Interestingly, the Peregrine Falcon population of the area appears to have decreased, with three sites which had held pairs at least until the mid-1990s (Jenkins & Wagner 1996; W. R. Tarboton & D. G. Allan pers. comm.) now occupied by breeding Lanners. Competition for nest sites and prey with its larger congeners has been cited as a possible reason for the rarity of the Taita Falcon (Hartley 2000). Taita Falcons were found breeding within 1 km of both Peregrine and Lanner pairs on the Mpumalanga/Limpopo escarpment (Table 1), and at one site Taita Falcons were observed successfully defending their territory against a close-neighbouring pair of Lanners.

Overall, the survey was a qualified success. Much of the available habitat was well covered, general knowledge of the Taita Falcon in South Africa, and how and where to look for this species in difficult, remote terrain, was vastly improved. Also, the known breeding population of Taita Falcons in South Africa was doubled, and a partial survey of the cliff-nesting raptor community of the Mpumalanga/Limpopo escarpment region was completed. However, whilst progress was made, a number of promising locations in the survey area were either not visited at all, or were not properly surveyed in 2006 due to time and logistical constraints. These sites should either be revisited or checked for the first time for Taita Falcon pairs before the overall survey can be considered comprehensive.



Figure 1. Google Earth® image of the Mpumalanga/Limpopo escarpment region, South Africa, showing the extent of the 2006 Taita Falcon *Falco fasciinucha* survey area (outlined in white), with the sections of cliff which were surveyed (marked in red).

Image de Google Earth® de la région de l'escarpement de Mpumalanga/Limpopo, Afrique du Sud, indiquant l'étendue de l'aire de l'inventaire du Faucon taita *Falco fasciinucha* de 2006 (délimitée en blanc), avec les sections de la crête de l'escarpement qui ont été contrôlées (marquées en rouge).



Figure 2. The Mpumalanga/Limpopo escarpment cliff-line: looking south from the summit of Mariepskop towards Hebronberg (Anthony J. van Zyl)

La crête de l'escarpement de Mpumalanga/Limpopo : vue à partir du sommet de Mariepskop vers Hebronberg, au sud (Anthony J. van Zyl)

Once the initial survey has been fully completed (preferably during the 2007 breeding season), the value of these new data for the southernmost Taita Falcon population would be greatly enhanced if it were fully integrated into existing knowledge of the species in areas to the north. This could best be achieved by means of a short workshop, bringing together raptor biologists with experience of Taita Falcons in their respective parts



Figure 3. Taita Falcon / Faucon taita *Falco fasciinucha* (Dalena Mostert)

of the continent. Key amongst these would be representatives from Ethiopia, Kenya, Tanzania, Zambia, Zimbabwe and South Africa. Such a workshop is essential for pooling accumulated knowledge of Taita Falcons and developing a prioritised, Pan-African survey, monitoring and research plan for this rare and possibly highly threatened species across its disjointed range.

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